

Supplemental Information

Figure Legends:

Supplementary Figure 1: DSC traces of DMPC/DMPS vesicles in the absence (solid lines) and in the presence (dotted lines) of 2 mol% of tau K19 in 10 mM Hepes, pH 7.4, 10 mM NaCl. The lipid concentration was 2.5 mM in each measurement. The colours represent a stepwise increase of the DMPS content: pure DMPC (black), DMPC/DMPS 80%:20% (red), DMPC/DMPS 60%:40% (blue), DMPC/DMPS 20%:80% (green) and pure DMPS (yellow). The black star indicates the L_{β} - P_{β} prephase transition of DMPC.

Supplementary Figure 2: Proton-decoupled 121.4 MHz ^{31}P -NMR spectrum of DMPC/DMPS vesicles in the absence (a) and presence (b) of 2 mol% tau K19. The water content was 50 wt% and the temperature 37°C. Red broke lines indicate fits to the experimental spectrum to extract the ^{31}P chemical shift anisotropy as described in Experimental Methods.

Supplementary Figure 3: Time course of tau K19 induced membrane leakage of (a) DMPC/DMPS (mol% 80/20) and (b) pure DMPS vesicles. Curves represent different Protein/Lipid ratios: (a) without protein (black), 2 mol% K19 (red), 4 mol% (blue), 20 mol% (green) and 40 mol% K19 (cyan); (b) without protein (black), 0.05 mol% K19 (red), 0.5 mol% (blue) and 5 mol% (green). Membrane leakage was initiated with tau K19 at 480 s and was terminated by adding triton X-100 after 1200 s to determine absolute leakage.

Supplementary Figure 4: ThT fluorescence spectrum of 6 μM of tau K19 after incubation with 600 μM of POPC/POPS LUVs (green) or 1.5 μM of heparin (black), respectively. Control spectra were acquired for only tau K19 (blue) and without ThT (red).







